Inland Fishing Methods

V.C. George
Former Head of Division (Fishing Technology)
Central Institute of Fisheries Technology
P.O. Matsyapuri, Cochin-682 029

India being the meeting ground of three major bio-geographic realms (Indo-Malayan, Eurasian and Afro-tropical) contributes a fish fauna of diverse habit and nature. Further we have various inland water resources such as rivers with a combined length of 45,000 km, estuaries 2.7 million ha, reservoirs 3.15 million ha and a net work of canals 1,26,334 km long. Thus the diverse fish fauna with the different water resources has led to the development of an array of fishing methods. Fishery resources include the priced major carps to the catfish, minor carps and the hill stream fishes.

Fishing crafts

Dug out, plank-built boats, tin boats are used in the deltaic regions and middle reaches of rivers and reservoirs while coracles are favoured in the rapids of the rivers. Rafts of wood or any floating object including foam plastic are used in the periphery of reservoirs and rivers. Apart from these, mechanized boats are used in certain reservoirs either as carrier / inspection boats.

Fishing gear

All types of fishing methods ranging from fishing by hand to the complicated net fishing systems, are practised in the inland waters.

Fishing without gear

In allmost all the river banks, tributaries and small ponds fishes are collected by hand, where they will be hiding in the stone crevices. In the case of small ponds and pools the water is drained and then the fishes are collected by hand.

Wounding gear

This is one of the common methods practised in the inland waters especially in the river systems of Kerala and Assam mainly in the upper reaches. The equipment used ranges from the spear either in the form of a sharp ended bamboo or metal spear with a wooden handle. Bow and arrows and blowguns are also in vogue in certain river systems of Assam and Kerala.

Stupefying methods

Ichthyopoisons even though prohibited are prevalent in almost all the river systems of the country. Wooden clubs are used for the capture of fishes in Assam and other hill streams. Dynamiting in the rocky pools of Assam in the river course of Brahmaputra is a common practice as is in others. Though electrical fishing is not popular, illegally this practice is occurring in many riverine systems.

Line fishing is having a cosmopolitan distribution in the entire inland fishing system. This includes the fly-fishing for the cold-water fishes and hand lining for carps and catfishes. Hand lines in the form of drop lines either with single snood or multiple snood with hook No.11-20 are operated in the upper reaches of reservoirs and rivers where there is feeding ground of fish.

Long lines used are the set long lines mainly for catfishes and carps in river systems and reservoirs. The size of these hooks ranges from no. 8 to 18 and the length of the snood ranges from 0.5 to 0.75 m. These lines are operated during evening and either hauled up or inspected on the next day morning. Baits used varies from small prawns, fishes, earthworm, small fishes and algal plants. The length of the long line varies with the area of the ground. Usually 300-400 hooks are operated by each group.

Traps

Tubular traps are common in the rivulets and upper reaches of rivers wherein they are set in a row against the flow of water. Fishes are guided to these traps by a stone barrier. As there is a funnel, fish that enters are prevented from escape.

Trap nets called *vasha kona* was extensively used for migrating hilsa and carps of rivers Brahmaputra in Assam and Hoogly estuary. In this method the fish is guided to the trap net by a leader wing followed by a set of net funnels leading to a blind codend of the trap.

Similarly wooden barriers or net barriers with lever lift nets are operated for migratory hilsa in River Ganga at Allahabad. This has become uneconomical with the inception of Farakka barrage.

Aerial traps

The jumping character of carps while encountering an obstruction is utilized in this type of fishing gear which is prevalent in the bheels of West Bengal and river tributaries of Assam. These nets are set perpendicular to the path of movement of the fish. On seeing an obstruction they jump out of water and are caught in the vertical part of the net. In order to lead the fish into these nets leader lines are also employed.

In the raft traps of Allahabad in the Ganga system, floating platform with wooden wicker works are allowed to drift in the river. The fishes on jumping at the site of these rafts get trapped in the wooden wicker works.

Bag nets with fixed mouth

Push nets are operated in all the shallow inland waters. It consists of a 'V' shaped frame formed by fixing two bamboo or wooden poles at 45°, and the two sides of 'V' forms the sides on which the webbing is attached from the sides of the mouth. The side opposite to the angle is the base and to the rope at the base the webbing is fixed. The net is operated by pushing through water and it scrapes the bottom. Periodically the net is lifted and the catch which consists of small fishes are collected.

Stow net on anchor are operated on the deltaic region of the river where there is a regular current. *Bheem jal* of Hoogly estuary is a conical net with two short wings extending to small ropes which are in turn fixed to the ground by anchor. The mouth of the net is kept open by wooden spreaders in addition to floats and sinkers. Fishes and prawns that enter in the net with the current are collected in the cod end of the net and collected at the end of each tide.

Seine nets

Stick held seine nets, which include *do dandi* of Ganga at Allahabad, *khadi jal* of Orissa and *kondala* of Andhra Pradesh are small seine nets, the mouth of which is kept open by wooden rods fixed between the head and foot rope. These nets are operated by two men wading in water in shallow waters along the shore. While operating the nets, the fishes are scared towards the nets by splashing water with one hand. The catch consists of mainly shoreline fishes.

Beach seine commonly known as *maha jal* is a popular bulk catching technique in the middle and lower reaches of rivers and in some reservoirs. As usual, these beach seines have two wings and a central bunt area without bag. Even though the wings are equal in normal case, in Derwari of Allahabad the shore wing is short. The *karia jal* of Allahabad is a small edition of the *maha jal*. Due to the decrease in the fishery resources of major rivers these beach seines are being phased out by gill nets. In few of the *maha jal* of Assam an escape window of small meshes is incorporated by the fishermen for the escape of undersized fishes.

Falling nets, cover pots or plunge baskets

Ottal of Kerala and *tapai* of Rajasthan are plunge baskets made of split bamboo mainly for murrels that live in shallow waters. *Kuriyar* of Allahabad is identical to the *tapar* except that the bamboo wicker work is replaced by a frame with netting. After plunging with the *kuriyar* the webbing is released so that the fish get entangled in the netting.

Cast nets are common in all the inland water bodies except that its size varies with the depth of the water. There are two types of cast nets one with closing string and other without closing string but with pockets all along the bottom margin.

Gill nets

Like cast nets gill nets are also well distributed in all division of the inland waters. The fishing depth, mesh size and length of the fleet varies according to the depth of the ground, fish and extend of the area. Nets of less fishing depth are observed in the rivulets and upper reaches of rivers, while the maximum fishing depth is noticed in reservoirs. Mesh size of these nets are also dependent on the species; 20-40mm bar is used for minor carps cat fishes and other small fishes and 75 – 120mm are used for carps and large cat fishes. Polyamide multifilament and monofilament are the common fishing gear material. Typical gill nets have a head rope and the use of foot rope is optional. In some cases the head rope is substituted by a row of large meshes of thicker twines. These nets are operated in the night, setting done before sun set and hauling by morning. However operation during day time is common during the migratory period of the fish and flood months.

Technical improvements in these gill nets have been experimented and incorporated which includes the addition of footrope for better net performance. There has also been investigation on frame nets, vertical lines net and trammel nets for the capture of large fishes in sparsely populated water bodies and also in water bodies where a strong current occurs during certain seasons. All these nets increases the entangling capacity and in turn improve the catching efficiency.

Trawl nets

Trawl fishing has been recommended as an active fishing method in reservoir for the control / capture / elimination of cat fishes, uneconomical fishes and trash fishes.

Conclusion

In conclusion, it may be summarized that the distribution of fishing gear in riverine systems shows a clear distinction. In the upper reaches where there is a rapid current and the depth is very low, traps of various types, poisoning, cast nets, spears and small meshed gill nets with minimal fishing height are the major fishing gear. In the middle reaches, seine nets, gill nets, traps nets and fish barriers are prevalent. Lower reaches show the predominance of gill nets, bag nets, lines and cast nets. Gill nets are the predominant fishing method of reservoirs followed by long line, drop line, shore seine, cast nets and stick held seine nets. In the pond fishery, cast nets, stick held nets, gill nets and lantern nets are common.